

**CLAIMS**

We claim:

5           1.     A method of targeted delivery of mammalian stem cells of myeloid origin into a nervous system of a mammal, comprising

          (a)     administering a therapeutically effective amount of mammalian stem cells of myeloid origin into a nervous system of said mammal;

10           (b)     migrating of said mammalian stem cells of myeloid origin from the injection site to a preferred site in a nervous system of said mammal; and

          (c)     engrafting of said mammalian stem cells of myeloid origin into said nervous system of said mammal at said preferred site.

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          2.     The method of **Claim 1**, wherein said mammalian stem cells of myeloid origin are derived from at least one of the group of bone marrow, mobilized peripheral blood, umbilical cord blood, or fetal liver tissue from a mammal.

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          3.     The method of **Claim 1**, wherein administration of said therapeutically effective amount of mammalian stem cells is at least one of the group of intrathecal, intraventricular, intracisternal, intraparenchymal into the brain or spinal cord, or systemic.

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          4.     The method of **Claim 1**, wherein administration of said mammalian stem cells of myeloid origin is a combination of at least two of the group of intrathecal, intraventricular, intracisternal, intraparenchymal into the brain or spinal cord, or systemic.

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          5.     The method of **Claim 1**, wherein said mammalian stem cells of myeloid origin maintain the pluripotential capacity to differentiate into neuronal and glial cells.

6. The method of **Claim 1**, wherein said mammalian stem cells are transiently or stably genetically engineered by at least one viral vector or non-viral transfection.

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7. The method of **Claim 1**, wherein said mammalian stem cells of myeloid origin deliver viral vectors, other transducing agents, or biological pumps of peptides directly into said nervous system of said mammal.

10 8. The method of **Claim 1**, wherein delivery of said mammalian stem cells of myeloid origin comprises delivery of cells expressing CD34.

9. The method of **Claim 1**, wherein delivery of said mammalian stem cells of myeloid origin comprises delivery of cells negative for CD34.

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10. A method of treating disorders, diseases, or trauma of a nervous system of a mammal, comprising

(a) administering a therapeutically effective amount of mammalian stem cells of myeloid origin into a nervous system of said mammal;

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(b) migrating of said mammalian stem cells of myeloid origin from the injection site to a preferred site in a nervous system of said mammal;

(c) engrafting of said mammalian stem cells of myeloid origin into said nervous system of said mammal at said preferred site;

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(d) differentiating of said engrafted mammalian stem cells of myeloid origin of step (c) into neuronal and glial cells; and

(e) replacing damaged nervous system tissue of said mammal with said neuronal and glial cells of step (d).

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11. The method of **Claim 10**, wherein said mammalian stem cells of myeloid origin are derived from at least one of the group of bone marrow,

mobilized peripheral blood, umbilical cord blood, or fetal liver tissue from a mammal.

5       12. The method of **Claim 10**, wherein administration of said therapeutically effective amount of mammalian stem cells is at least one of the group of intrathecal, intraventricular, intracisternal, intraparenchymal into the brain or spinal cord, or systemic.

10       13. The method of **Claim 10**, wherein administration of said therapeutically effective amount of mammalian stem cells is a combination of at least two of the group of intrathecal, intraventricular, intracisternal, intraparenchymal into the brain or spinal cord, or systemic.

15       14. The method of **Claim 10**, wherein said mammalian stem cells are transiently or stably genetically engineered by at least one viral vector or non-viral transfection.

20       15. The method of **Claim 10**, wherein said mammalian stem cells of myeloid origin deliver viral vectors, other transducing agents, or biological pumps of peptides directly into said nervous system of said mammal.

25       16. The method of **Claim 10**, wherein administration of said therapeutically effective amount of mammalian stem cells of myeloid origin comprises delivery of cells expressing CD34.

      17. The method of **Claim 10**, wherein administration of said therapeutically effective amount of mammalian stem cells of myeloid origin comprises delivery of cells negative for CD34.

30       18. A method of treating a nervous system disorder, disease, or trauma in a mammal, comprising

      (a) administering a therapeutically effective amount of mammalian stem cells of myeloid origin into a nervous system of said

mammal, wherein said mammalian stem cells are transiently or stably genetically engineered by at least one viral vector or by non-viral transfection;

5 (b) migrating said mammalian stem cells of myeloid origin from the injection site to a preferred site in a nervous system of said mammal;

(c) engrafting said mammalian stem cells of myeloid origin into said nervous system of said mammal at said preferred site;

10 (d) differentiating said engrafted mammalian stem cells of myeloid origin of step (c) into neuronal and glial cells; and

(e) replacing damaged nervous system tissue of said mammal with said neuronal and glial cells of step (d).

15 19. A method of treating a nervous system disorder, disease, or trauma in a mammal, comprising

20 (a) administering a therapeutically effective amount of mammalian stem cells of myeloid origin into a nervous system of said mammal, wherein said stem cells of myeloid origin deliver viral vectors, other transducing agents, or biological pumps of peptides directly into said nervous system of said mammal;

(b) migrating said mammalian stem cells of myeloid origin from the injection site to a preferred site in a nervous system of said mammal;

25 (c) engrafting said mammalian stem cells of myeloid origin into said nervous system of said mammal at said preferred site;

(d) differentiating said engrafted mammalian stem cells of myeloid origin of step (c) into neuronal and glial cells; and

(e) replacing damaged nervous system tissue of said mammal with said neuronal and glial cells of step (d).